LAPIN, B.A.; ZIL'BER, L.A.; ADZHIGITOV, F.I. (Sukhumi)

Morphological characteristics of tumors induced with the Rous virus in monkeys. Arkh. pat. 27 no.9:61-63 '65.
(MIRA 18:12)

1. Otdel patologii Instituta eksperimental'noy patologii i terapii (direktor - prof. B.A. Lapin) AMN SSSR. Submitted August 5, 1964.

ADZHIKULOV, ESENBEK

ADZHIKULOV, ESENBEK: "Experimental investigation of the pharmacology of cardiac glycoside-'convalluside'." Kiev Order of Labor Red Banner Medical Inst imeni Academician A. A. Bogomolets. Kiev, 1956. (Dissertation for the Degree of Candidate in Medical Sciences)

Source: Knizhnaya letopis' No. 28 1956 Moscow

ADZHIMAMUDOV, E.B.; OGANISYAN, Sh.S.

Determining the accelerating force of weight in Erivan. Izv. AN Arm. SSR. Ser. geol. i geog. nauk 10 no.3:79-82 '57. (MIRA 10:12)

1. Institut geolcgicheskikh nauk AN ArmSSR.
(Erivan--Gravity)

ADZHIMAMUDOV, E.B.

Bouguer reduction. Izv.AN Arm.SSR Ser.geol.i geog.nauk v. 11 no.4:73-76 '58. (MIRA 12:1)

1. Institut geologicheskikh nauk AN ArmSSR.
(Gravity)

ADZHIMAMUDOV, E. B.,

"The repport existing between recent volcanism and the geophical fields of Armenia"

Report to be submitted for the 13th General Assembly, Intl. Union of Geodesy and Geophysics (IUGG), Berkeley Calif., 19-31 Aug 63.

ADZHIMAMUDOV, S.G.

Precast reinforced concrete conjugate beams on multiple supports. Izv.An Arm. SSR. Ser.tekh.nauk 14 no.2:57-58 '61. (MIRA 14:3)
(Girders) (Precast concrete)

USSR/Diseases of Plants. Diseases of Cultivated Plants O-2

Abs Jour : Ref Zhur-Biol., No 2, 1958, 6439

Author : Adzhimamudova V. O.
Inst : Not given
Title : Diplodiosis of Corn in Georgia, USSR

Orig Pub : Kukuruza, 1956, No 6, 45-47

Abstract : No abstract

Card 1/1

ADZHIMAMUDYAN, N.I.; KEMPINSKAYA, A.V.; UZDIN, M.M.; SHILOV, R.M.; ZAYTSEV, V.I., retsenzent; LUTOVINOV, G.V., retsenzent; PISAREVA, Ye.I., red.

[Fundamentals of construction planning of depots and plants for railroad transportation and of the planning of their territories] Osnovy stroitel'nogo proektirovaniia depo i zavodov zheleznodorozhnogo transporta. [By] N.I.Adzhimamudian i dr. Leningrad, Leningr. in-t inzhenerov zhel-dor. transporta im. V.N.Obraztsova, 1963. 79 p. (MIRA 17:7)

1. Rukovoditel' gruppy Leningradskogo Gosudarstvennogo instituta proyektirovaniya na transporte (for Zaytsev). 2. Leningradskiy Gosudarstvennyy institut proyektirovaniya na transporte (for Pisareva)

ADZHIMOLAYEV, T. A.; GAVRILOV, V. V.

Characteristics of the impedance of the skeletal musculature in dogs at different age periods. Dokl. AN SSSR 147 no.4: 981-984 D '62. (MIRA 16:1)

1. Institut normal'noy i patologicheskoy fiziologii AMN SSSR. Predstavleno akademikom V. N. Chernigovskim.

(MUSCLE) (ELECTROPHYSIOLOGY)

ADZHIMOLAYEV, T.A.

Electrophysiological analysis of true pessimum of the neuromuscular apparatus in adult animals. Biul. eksp. biol. i med. 55 no.2:3-7 F'63. (MIRA 16:6)

1. Iz laboratorii vozrastnoy fiziologii i patologii (zav. prof. I.A. Arshavskiy) Instituta normal'noy i patologicheskoy fiziologii (dir. - deystvitel'nyy chlen AMN SSSR prof. V.V.Parin) AMN SSSR, Moskva.
(ELECTROPHYSIOLOGY)

ADZHIMOLAYEV, T.A.

Mechanism of inhibition of the development in the neuromuscular apparatus in ontogeny. Trudy Inst. norm. i pat. fiziol. AMN SSSR 6:43-45 '62 (MIRA 17:1)

1. Laboratoriya vozrastnoy fiziologii i patologii (zav. - prof. I.A.Arshavskiy) Instituta normal'noy i patologicheskoy fiziologii AMN SSSR.

ADZHIMOLAYEV, T.A.; ROZANOVA, V.D.

Mechanism of the development of inhibition (true pessimum) of the neuromuscular apparatus in ontogenesis. Nerv. sist. no.4: 33-35 '63 (MIRA 18:1)

1. Institut normal'noy i patologicheskoy fiziologii AMN SSSR, Moskva.

ADZHIMOLAYEV, T.A.

Electrophysiological analysis of the phenomena of optimum and pessimum in the neuromuscular apparatus at an early age. Biul. eksp. biol. i med. 55 no.3:11-15 Mr '63.

(MIRA 18:2)

1. Iz laboratorii vozrastnoy fiziologii i patologii (zav. - prof. I.A. Arshavskiy) Instituta normal'noy i patologicheskoy fiziologii (direktor - deystvitel'nyy chlen AMN SSSR prof. V.V. Parin) AMN SSSR, Moskva. Submitted August 9, 1961.

ADZHIMOLAYEV, T.A.

Nature of spinal inhibition in dogs of various ages. Trudy Inst. norm. i pat.fiziol. AMN SSSR 7:3-5 '64. (MIRA 18:6)

1. Laboratoriya vozrastnoy fiziologii i patologii (zav. - prof. I.A.Arshavskiy) Instituta normal'noy i patologicheskoy fiziologii, AMN SSSR.

ADZHIMOLAYEV, T.A.; PRAZDNIKOV, V.P.

Nerve and muscle refractivity and effects of curare in dogs of various ages. Trudy Inst.norm.i pat.fiziol. AMN SSSR 7:5-6 '64. (MIRA 18:6)

1. Laboratoriya vozrastnoy fiziologii i patologii (zav. - prof. I.A.Arshavskiy) Instituta normal'noy i patologicheskoy fiziologii AMN SSSR.

ADZHIMOLAYEV, T.A.

Characteristics of synaptic delay in the neuromuscular apparatus in dogs during various age periods. Biul.eksp.biol. i med. 59 no.5:12-15 '65. (MIRA 18:11)

1. Laboratoriya vozrastnoy fiziologii i patologii (zav. - prof. I.A.Arshavskiy) Instituta normal'noy i patologicheskoy fiziologii (direktor - deystvitel'nyy chlen AMN SSSR V.V.Parin) AMN SSSR, Moskva. Submitted February 14, 1964.

ADZHI-MOLLAYEV, A. A.

Adzhi-Mollayev, A. A. "The cysicercosis of muscles," Sbornik trudov Nauch.-issled. in-ta ortopedii, travmatologii i protezirovaniya (M-vo zdravookhraneniya Us SSR), Vol. 1, 1948, p. 247-51

SO: U-4934, 29 Oct. 53, (Letopis 'Zhurval 'nykh Statey, No. 16, 1949).

27961. ADZHI-MOLLAYEV, A. A. -- K rentgenodiagnostike khronicheskikh ognestrel'nykh osteomielitov. Trudy pervoy nauch. Mezhresp. Konf-tsii po lecheniyu invalidov otechestv. Voyny v sred. Azii. Tashkent, 1949, S. 189-97.

SO: Letopis' Zhurnal'nykh Statey. Vol. 37, 1949.

Dissertation: "Clinicoroentgenological Characteristics of Remote Results of Penetrating Gunshot Wounds of the Thoracic Cavity." Dr Med Sci, Central Inst for the Advanced Training of Physicians, 11 May 54. Vechernyaya Moskva, Moscow, 3 May 54.

SO: SUM 284, 26 Nov 1954

ADZHZI-MOLLAYEV, A.A., professor (Tashkent)

Pulmonary tomography in gunshot wounds of the thorax. Klin.med. 34 no.3:43-46 Mr '56. (MIRA 10:1)

1. Iz rentgenologicheskogo otdeleniya (zav. A.A.Adzhi-Mollayev) Uzbekskogo nauchno-issledovatel'skogo instituta ortopedii, travmatologii i protezirovaniya (dir. - kandidat meditsinskikh nauk A.Sh. Shakirov)

(THORAX, wounds and injuries,
gunshot, pulm. tomography (Rus))
(WOUNDS AND INJURIES,
gunshot of thorax, pulm. tomography in (Rus))
(LUNGS, radiography,
tomography in thoracic gunshot wds. (Rus))

ADZHI-MOLLAYEV, A.A., prof.

X-ray diagnosis and X-ray therapy of osteogenic sarcoma. Med. zhur.Uzb. no.12:11-17 D '58. (MIRA 13:7)

1. Iz Uzbekskogo nauchno-issledovatel'skogo instituta travmatologii i ortopedii (direktor - kand.med.nauk A.Sh.Shakirov).
(BONES--TUMORS) (X RAYS--THERAPEUTIC USE)

ADZHI-MOLLAYEV, A.A., prof.

"Oral choleocystography" by D.N.Maksumov. Reviewed by A.A.Adzhi-Mollaev. Med. zhur. Uzb. no.11:78-79 N '60. (MIRA 14:5)
(GALL BLADDER--RADIOGRAPHY) (MAKSUMOV, D.N.)

ADZHI-MOLLAYEV, A.A., prof.; SOROKINA, V.A., dotsent; TEREKHOV, O.G., kand.med.nauk

Clinical, roentgenological and pathohistological juxtaposition in primary neoplasms of the bones of extremities. Med.zhur. Uzb. no.8:13-20 Ag '62. (MIRA 16:4)

1. Iz Uzbekskogo nauchno-issledovatel'skogo instituta travmatologii i ortopedii (dir. - B.A.Akhundzhanov) i kafedry travmatologii i ortopedii (zav. - prof. B.I.Berliner) Tashkentskogo gosudarstvennogo meditsinskogo instituta.
(EXTREMITIES (ANATOMY)--TUMORS)

ADZHI-MOLLAYEV, A.A., prof. (Tashkent, Sovetskaya ul. d.4)

X-ray treatment of primary bone reticulosarcoma. Ortop., travm. i protez. 24 no.11:36-38 N '63. (MIRA 17:10)

1. Iz Uzbekskogo instituta travmatologii i ortopedii (dir. - B.A. Akhundzhanov).

ACC NR: AP6031013 SOURCE CODE: UR/0167/66/000/004/0016/0022

AUTHOR: Adzhi-Veli, Ya. Kh.

ORG: Moscow Engineering Physics Institute (Moskovskiy inzhenerno-fizicheskiy institut); Tashkent Polytechnic Institute (Tashkentskiy politekhnicheskiy institut)

TITLE: On the minimization of functions of many-valued logic

SOURCE: AN UzSSR. Izvestiya. Seriya tekhnicheskikh nauk, no. 4, 1966, 16-22

TOPIC TAGS: computer program logic, machine language, characteristic function

ABSTRACT: The article deals with formulating the relatively uninvestigated problem of the minimization of the logic functions of many-valued logic such as, basically: 1) constants, i.e. functions identically equal to 0, 1, 2 and 3, respectively; 2) characteristic functions φ_i of the i-th order; 3) functions of 4-valued disjunction and conjunction, and 4) the inversion function. The following theorems are presented: Theorem 1. Any function $f(v_1, v_2, \ldots, v_n)$ of 4-valued logic may be presented as

$$f(v_1, v_2, \ldots, v_n) = \bigvee_{j=0}^{4^n-1} F_j f(a_1, a_2, \ldots, a_n). \quad (1)$$

Theorem 2. Any function $f(v_1, v_2, \ldots, v_n)$ of 4-valued logic may be presented as

$$f(v_1, v_2, \ldots, v_n) = \bigwedge_{j=0}^{4^n-1} \left(\Phi_j \quad f(a_1, a_2, \ldots, a_n) \right) \quad (2)$$

The proofs of both theorems ensue from the fact that the operations of disjunction and conjunction in 4-valued logic are subject to the commutative, associative and distributive laws — and that, for the analytic expression of all functions of 4-value logic, DCNF (disjunctive completely normal form) and CCNF (conjunctive completely normal form) may be constructed in the same way as in Boolean algebra. Definition: The disjunction of elementary characteristic conjunctions is termed 4-valued disjunctive normal form (FVDNF). A geometric interpretation of the problem of finding the minimum FVDNF (i.e. the FVDNF containing the smallest number of characteristic functions compared with all the other FVDNFs equivalent to a given function) is considered with respect to the set of nodes of a n-variate spatial lattice (hypercube) whose elements correspond to conjunctions of specific rank. Thus, the nodes correspond to third-rank conjunctions; the edges, to second-rank conjunctions; and the planes, to first-rank conjunctions. Theorem 3. The minimum FVDNF of the function $f(v_1, v_2, \ldots, v_n)$

ACC NR: AP6031013

is derived from the abridged FVDNF for this function on discarding certain disjunctive terms. The problem of minimization of the functions of 4-valued logic is carried out in two stages. During the first stage the abridged FVDNF of the concerned function is constructed and during the second stage it is developed into the minimum FVDNF of the same function. This approach to the minimization of functions of many-valued logic may be applied to the solution of the first problem of such minimization with respect to: inversion, conjunction and disjunction. Orig. art. has: 1 figure, 15 formulae.

SUB CODE: 09, 06/ SUBM DATE: 09Oct65/ ORIG REF: 003

Card 3/3

ADZHIYEV, B.L.

Fatal case of zinc phosphide poisoning. Sud.-med.ekspert. no.4:50-51 O-D '65. (MIRA 18:12)

1. Sudebnomeditsinskiy ekspert g. Khasavyurta. Submitted January 28, 1965.

ADZHIYEVA, A.I.

Effect of added amounts of magnesium oxide on the catalytic properties of molybdenum oxide - aluminum oxide catalysts in the aromatization of n-heptane. Izv.vys.ucheb.zav.; neft' i gaz 2 no.11:89-94 '59. (MIRA 13:4)

1. Azerbaydzhanskiy institut nefti i khimii im. M.Azizbekova.
(Catalysts) (Magnesium oxide) (Heptane)

PODVARKO, A.G.; ADZHIYEVA, S.P.

Recurrences of typhoid fever during symptomatic treatment. Zhur. mikrobiol. epid. i immun. 32 no.6:82-86 Je '61. (MIRA 15:5)

1. Iz Dagestanskogo meditsinskogo instituta i Dagestanskoy respublikanskoy klinicheskoy bol'nitsy.

(TYPHOID FEVER)

ADZHUBEY, Aleksey Ivanovich; KISELEV, Ya., redaktor; YEGOROVA, I, tekhnicheskiy redaktor.

["Silver cat" or a trip through America]"Serebrianaia koshka", ili puteshestvie po Amerike. Moskva. Izd-vo TsK VLKSM "Molodaia gvardiia". 1956. 127 p. (MLRA 9:6)
(United States--Description and travel)

ADZHUBEY, Aleksey Ivanovich

[Cueca and the modern petty bourgeois] Kueka i modern-meshchane. M, Pravda, 1959. 62 p. (Biblioteka Ogonek, 7) (MIRA 12:6)

(Latin America--Description and travel)

AZIZYAN, A.K.; ANDRIYANOV, B.V.; BARASHEV, P.R.; BUGAYEVA, M.I.; VASIL'YEV, N.I.; DENISOV, N.N.; ZASLAVSKIY, B.Ye.; OSTROUMOV, G.N.; TYUPAYEV, A.S.; ADZHUBEY, A.I., red.; GORYUNOV, D.P., red.; IL'ICHEV, L.F., red.; SATYUKOV, P.A., red.; SIVOLOBOV, M.A., red.; SKURIDIN, G.A., red.; TOLMACHEV, A.V., red.; DANILINA, A.I., tekhn. red.

[Dawn of the outer space era] Utro kosmicheskoi ery. Moskva, Gospolitizdat, 1961. 762 p. ___ [Phonograph record "World flight to the stars. Soviet man in outer space;" report] Gramofonnaia plastinka "Vsemirnyi reis k zvezdam. Sovetskii chelovek v kosmose"; reportazh. (MIRA 14:10)

1. Redaktsiya gazety "Pravda" (for Azizyan, Denisov). 2. Komitet po radioveshchaniyu i televideniyu (for Andriyanov). 3. Redaktsiya gazety "Komsomol'skaya pravda" (for Barashev). 4. Redaktsiya gazety "Sovetskoye foto" (for Bugayev). 5. Redaktsiya gazety "Krasnaya zvezda" (for Vasil'yev). 6. Gosudarstvennoye izdatel'stvo politicheskoy literatury (for Zaslavskiy). 7. Redaktsiya gazety "Izvestiya" (for Ostroumov). 8. Telegrafnoye agenstvo SSSR (for Tyupayev). (Astronautics)

GORBATOV, V.M.; ISKANDARYAN, A.K.; ADZHYAN, M.P.; POMERANTSEVA, N.V., otv. red.; MANVELOVA, Ye.S., tekhn. red.

[Meat research in the U.S.A.] Issledovanie miasa v SShA. Moskva, 1962. 26 p. (MIRA 16:1)

1. TSentral'nyy institut nauchno-tekhnicheskoy informatsii pishchevoy promyshlennosti. 2. Vsesoyuznyy nauchno-issledovatel'skiy institut myasnoy promyshlennosti (for Gorbatov, Iskandaryan, Adzhyan).
(United States--Food research) (Meat)

AVAKYAN, TS.M.; ADZHYAN, N.S.; ATAYAN, R.R.

Magnet defocusing device for detecting spontaneous ultraweak luminescence of biological substrates. Biofizika 8 no.3:385-387 '63. (MIRA 17:11)

1. Nauchno-issledovatel'skiy institut zemledeliya, Echmiadzin.

AVAKYAN, TS.M.; ADZHYAN, N.S.; KAZARYAN, G.T.

All-purpose automatic units for the production of intracellular microelectrodes. Izv. AN Arm. SSR. Biol. nauki 18 no.6:93-97 Je '65. (MIRA 18:9)

1. Laboratoriya biofiziki Nauchno-issledovatel'skogo instituta zemledeliya goroda Echmiadzin.

L 23846-66
ACC NR: AP6015266 SOURCE CODE: UR/0298/65/018/006/0093/0097

AUTHOR: Avakyan, Ts. M.; Adzhyan, N. S.; Kazaryan, G. T.

ORG: Biophysics Laboratory, Scientific Research Institute of Farming, Echmiadzin (Laboratoriya biofiziki NII zemledeliya)

TITLE: All-purpose automatic units for manufacturing intracellular microelectrodes

SOURCE: AN ArmSSR. Izvestiya. Seriya biologicheskikh nauk, v. 18, no. 6, 1965, 93-97

TOPIC TAGS: electrode, circuit design, automatic machine, electronic manufacturing machinery

ABSTRACT: The article describes an automatic machine constructed by the authors for manufacturing intracellular microelectrodes. The circuit diagram and blueprints are given. The construction and operation of the units for preliminary preparation of the capillary tubes and for obtaining the microelectrodes are described. The circuits allow simultaneous control of the operation of both units. Orig. art. has: 3 figures. [JPRS]

SUB CODE: 09, 06 / SUBM DATE: 27Nov64 / ORIG REF: 003 / OTH REF: 001

Card 1/1

ADZHYAN, Pogos Arutyunovich, zasluzhennyy zootekhnik RSFSR; PAKHTUSOV, Zosima Ivanovich, kand.sel'skokhoz.nauk; KADIYEVA, Ye.V., red.; DEYEVA, V.M., tekhn.red.

[Using food waste for fattening swine] Otkorm svinei na pishchevykh otkhodakh. Moskva, Gos.izd-vo sel'khoz.lit-ry, 1960. 78 p. (MIRA 14:2)

(Swine--Feeding and feeds)

AVAKYAN, T.M.; TARUSOV, B.N.; ADZHYAN, S.N.

"Oxygen effect" of bioluminescence. Trudy MOIP. Otd. biol. 21:6C-63 '65. (MIRA 18:6)

ADZIC, Risto, inz. (Zemun, Banatska 63)

Some problems of the internal organization and self-management in school centers. Tehnika Jug 17 no.11:Suppl.: Organizacija rada 12 no.11:2212-2219 N '62.

1. Pomocnik direktora Skolskog centra za metalopreradivacku i elektrostruku, Zemun.

ADZIC, Rista, ing. (Zemun, Banatska 63)

Some important problems of machine-building school centers. Tehnika Jug.Suppl. Masinstvo 12 no.1:94-100 Ja '63.

1. Pomocnik direktora Skolskog centra za metalopreradivacku i elektrostruku, Zemun.

ADZIC, Risto, inz. dipl. meh. (Zemun, Banatska 63)

Mechanical Technical School. Tehnika Jug 18 no.9:Suppl.:Masinstvo 12 no.9:1688-1696 S '63.

1. Pomocnik direktora Skolskog centra za metalopreradivacku i elektro struku, Zemun.

ADZIC, Risto, dipl. inz., dipl. meh. (Zemun, Banatska 63)

A concept of the training plan for schools of mechanical engineering. Tehnika Jug 19 no.6: Suppl: Masinstvo 13 no. 6:1078-1083 Je '64.

1. Assistant Director, Petar Drapsin School of Mechanical Engineering, Belgrade.

ADZIMA, Stefan

Heating of reight car bearings. Zel dop tech 10 no.11:339-340 '62.

L 25315-65 EWT(1) IJP(c)

S/0201/64/000/004/0023/0029

ACCESSION NR: AP5003321

27
21

AUTHOR: Adzyarykha, K. S.; Samson, A. M.

TITLE: Contribution to the investigation of polarized luminescence of crystals

SOURCE: AN BSSR. Izvestiya. Seriya fiziko-tekhnicheskikh nauk, no. 4, 1964, 23-29

TOPIC TAGS: luminescence, polarization, Stokes parameter, luminescence center, luminescence intensity, cubic crystal

ABSTRACT: The vector-parametric method (method of four Stokes parameters), described by G. V. Rozenberg (UFN v. 56, 77, 1955 and v. 69, 57, 1959), is proposed for the study of the polarized luminescence of crystals. A transformation matrix is derived for the Stokes parameters for the crystal luminescence centers. With the aid of this matrix it is possible to obtain the most general relations for the intensity and principal polarization characteristics of luminescence of crystals of arbitrary syngony. Concrete calculations of the characteristics are made for cubic crystals. "The authors thank Professor B. I. Stsyapanaw for remarks."

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L 25315-65

ACCESSION NR: AP5003321

Orig. art. has: 1 figure, 27 formulas, and 1 table.

ASSOCIATION: None

SUBMITTED: 00 ENCL: 00

NR REF SOV: 007 OTHER: 000 SUB CODE: OP, SS

Card 2/2

AERO, E. L

S/181/60/002/007/005/042
B006/B070

AUTHORS: Aero, E. L., Kuvshinskiy, Ye. V.

TITLE: The Fundamental Equations of the Theory of Elasticity of Media With Rotational Interaction of Particles

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1399-1409

TEXT: The classical theory, which is based on the assumption of central forces acting between the molecules, is not able to describe many phenomena, for example, the propagation of short waves of sound. In order to be able to explain certain anomalies in the dynamic elasticity of plastics, the authors have developed a phenomenological theory of elasticity of complicated media, taking into account the rotational interaction of particles. In this theory, the particles are regarded not as points, but as extended objects whose distance from each other is equal to their diameter. The action of the particles on one another is described by a system of forces and moments. According to the schematic diagram of Fig. 1, equations for the equilibrium of forces are

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The Fundamental Equations of the Theory of Elasticity of Media With Rotational Interaction of Particles

S/181/60/002/007/005/042
B006/B070

set up, and the interaction of particles in contact with one another is investigated. The motion of a part of the medium enclosed by a surface is investigated, the equation of motion is set up, and expressions for the asymmetric stress tensor σ_{ik}, (Fig. 2), and the micromoment tensor μ_{ik} are discussed. Later, the deformation energy W of an element of the medium is investigated by taking into account the volume- and surface forces and moments. Equations (13) - (16) give integral equations for W. The deformation energy per unit volume is finally given by $dL = \sigma^s_{ik} de_{ik} + \text{dev } \mu_{ik} dr_{ik}$. Since, dr_{ik} is a deviator ($dr_{ll}=0$) $\mu_{ik} dr_{ik} \equiv \text{dev } \mu_{ik} dr_{ik}$, σ^s_{ik} is the symmetric part of the tensor σ_{ik}, e_{ik} is the "pure" deformation tensor of the classical theory. The properties of the tensor r_{ik} are investigated, and it is designated as the "tensor of small torsion and bending". The authors then investigate the elastic potential and Hooke's law for an isotropic substance of a constant mass,

Card 2/3

Card 3/3

KUVSHINSKIY, Ye.V.; AERO, E.L.

Continuity theory of asymmetric elasticity, allowing for "internal" rotation. Fiz. tver tela 5 no.9:2591-2598 S '63. (MIRA 16:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.

L 10764-65 EWT(d)/EWT(m)/EWP(w) ESD(t)/ASD(f)-2/AEDC(a) RM

ACCESSION NR: AP4044940 S/0181/64/006/009/2689/2699

AUTHORS: Aero, E. L.; Kuvshinskiy, Ye. V.

TITLE: Continuum theory of asymmetric elasticity. Equilibrium of an isotropic body

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2689-2699

TOPIC TAGS: elasticity theory, equilibrium equation, boundary condition, elastic potential

ABSTRACT: The solution is considered of equilibrium equations for an isotropic body, obtained by the authors in an earlier paper (FTT, v. 5, 2591, 1963) dealing with the asymmetric theory of elasticity. A system of two second-order vector equations for two unknown vector functions -- the displacement field U and the rotation field Ω for particles of the medium -- is reduced to two independent vector equations, one of which is the equilibrium equation in the standard

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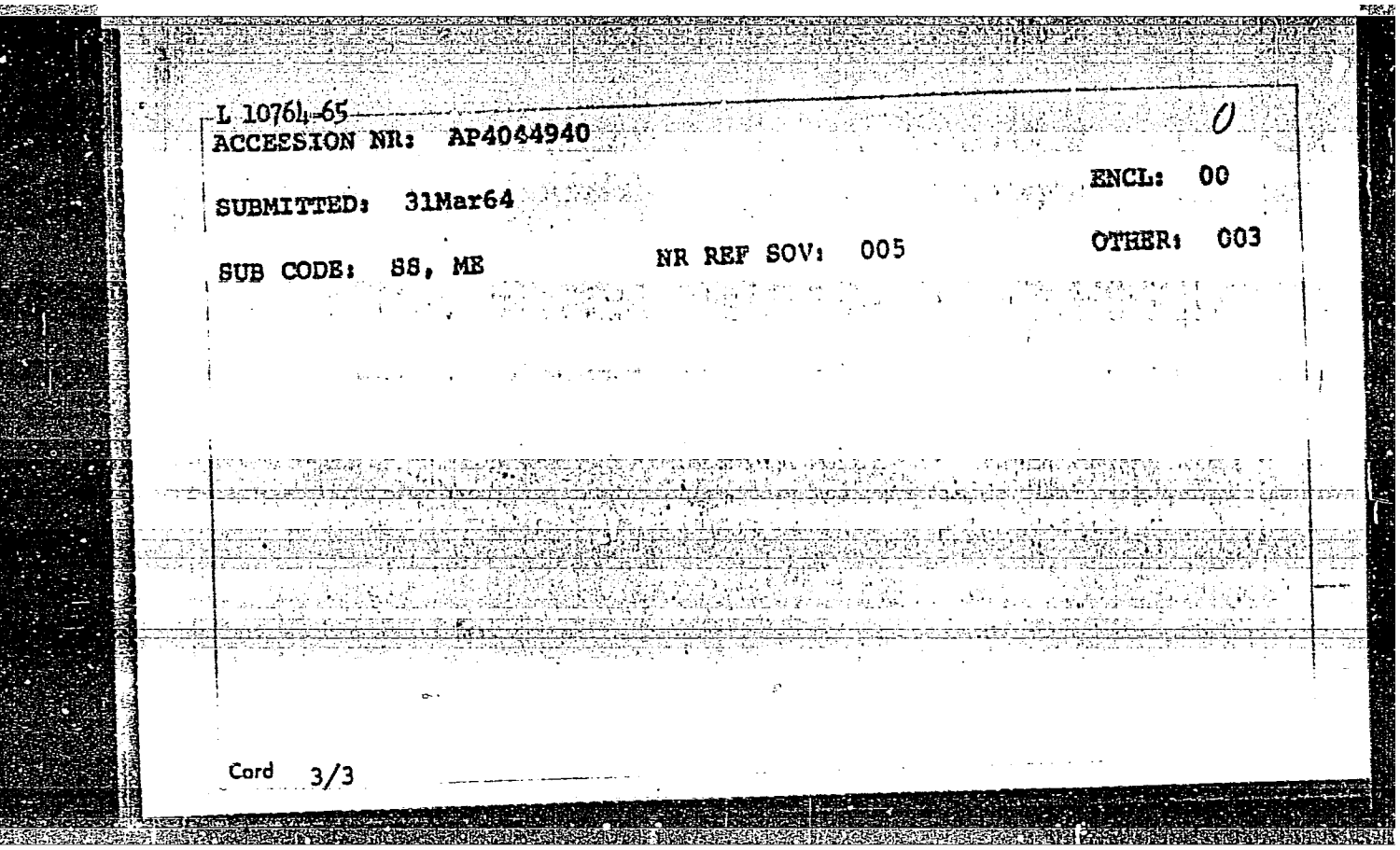
theory of elasticity. The relationship of the required functions U and Ω with the solutions of these vector equations is derived, i.e., the general form of the solution of the initial system of equilib-ium equations is obtained. General conclusions are drawn about departures from the standard theory. Conditions at the boundary of the body are discussed and the methods of finding the micro-moments at this boundary are dealt with. The conditions for elastic potential minimum (the inequality which is obeyed by elastic coefficients) are obtained; they restrict considerably the derived solutions. The results can be used to solve concrete problems in the asymmetric theory of elasticity. They can be used also as the basis of an approximate theory. Orig. art. has: 78 formulas.

ASSOCIATION: Institut vy*sokomolekulyarny*kh soyedineniy AN SSSR, Leningrad (Institute for High-Molecular Compounds, AN SSSR)



L 10764-65
ACCESSION NR: AP4044940 0

SUBMITTED: 31Mar64 ENCL: 00

SUB CODE: SS, ME NR REF SOV: 005 OTHER: 003

Card 3/3

L 45387-65 EWT(1)/EWP(m)/EPA(n)-2/EWA(d) Pd-1/Pu-4 MM

ACCESSION NR: AP5010631 UR/0040/65/029/002/0297/0308

AUTHORS: Aero, E. L. (Leningrad); Bulygin, A. N. (Leningrad); Kuvshinskiy, Ye. V. (Leningrad)

TITLE: Asymmetric hydromechanics

SOURCE: Prikladnaya matematika i mekhanika, v. 29, no. 2, 1965, 297-308

TOPIC TAGS: rheology, stress tensor, viscosity, hydrodynamics, asymmetric tensor, viscous flow, capillary motion

ABSTRACT: The generalized Newtonian and non-Newtonian equations of motion are [illegible] component velocity form, boundary conditions are outlined, and general solutions are proposed. The asymmetric stress tensor is defined by σ_{ik} and the micromoment tensor by μ_{ik}. The equations of translational and rotational motion are written in tensor notation, and it is shown that the asymmetricity of the stress tensor is caused by the [illegible] m_i. The dissipation function is expressed by

$$\Psi = (\sigma_{ik} + p\delta_{ik})\varepsilon_{ik} + \mu_{ik}\varepsilon_{ik}' ,$$

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and the stress tensor by $\sigma_{ik} = -p\delta_{ik} + \lambda e'_{ll}\delta_{ik} + (\mu + \gamma)\, e'_{ik} + (\mu - \gamma)\, e'_{ki}$

$$\mu_{ik} = 2\eta r'_{nn}\delta_{ik} + 2\tau r'_{ik} + 2\theta r'_{ki}$$

This leads to the final form of the equations of motion

$$\rho \frac{dv}{dt} = \rho f - \operatorname{grad} p + (\lambda + 2\mu) \operatorname{grad} \operatorname{div} v - (\mu - \gamma) \operatorname{rot} \operatorname{rot} v - 2\gamma \operatorname{rot} \Omega'$$

$$(\eta + \tau + \theta) \operatorname{grad} \operatorname{div} \Omega' - \theta \operatorname{rot} \operatorname{rot} \Omega' + 2\gamma\Omega' - \gamma \operatorname{rot} v + \rho m = 0.$$

A generalized solution is formulated for the case of creeping motion where m_i and f_i are both zero. A total of 7 boundary conditions is proposed, three of the type $[v^\circ - \theta\mu^{-1} \operatorname{rot} \Omega']_S = V$ (V = boundary velocity),

three of the type $\Omega'|_S = \frac{1}{2} \operatorname{rot} V$,

and one dynamic condition $M_i|_S = \mu_{ik} n_k|_S = 0$

A set of special cases is investigated where solutions are obtained for a capillary flow in circular tubes, the translational motion of spheres, and the

Card 2/3

L 45387-65

ACCESSION NR: AP5010631

suspension of spherical particles in a viscous fluid. Orig. art. has: 83 equations and 2 figures.

ASSOCIATION: none

SUBMITTED: 04Jul64 ENCL: 00 SUB CODE: MM

NO REF SOV: 006 OTHER: 009

Card 3/3

AYEROV, I.L. [Aerov, I.L.]

Effect of changing photoperiods on the development of woody plant seedlings. Ukr. bot. zhur. 19 no.6:39-47 '62. (MIRA 16:2)

1. Institut botaniki AN UkrSSR, otdel fotosinteza.
(Photoperiodism) (Woody plants)

AEROV, I.L.

Effect of photoperiodism on the growth and development of woody plants. Ukr. bot. zhur. 20 no.2:3-13 '63. (MIRA 16:6)

1. Institut botaniki AN UkrSSR, otdel fotosinteza.
(Photoperiodism) (Woody plants)

AUTHOR: Aerov, L.P. SOV/94-58-11-10/28
Bas'kov, K.P.
Bovin, V.G.
Georgiyevskiy, P.I.
Ivin, Ya.Ye.
Kuz'min V.A.
Strakhov, K.I.
Shageyev, Ye. A.

TITLE: The Production of Accurate Castings by the Lost Wax Process with Patterns Made of Composition MAI-KTM-500. (Proizvodstvo tochnogo lit'ya po vyplavlyayemym modelyam na sukhom napolnitele s primeneniyem splava MAI-KTM-500)

PERIODICAL: Promyshlennaya Energetika, 1958, Nr 11, pp 19-21 (USSR)

ABSTRACT: This article is about a suggestion that was awarded second premium in an All-Union power economy competition. The staff of the works together with the Chair of Metal Technology of the Moscow Aviation Institute developed and introduced the process of accurate casting by the lost wax process using a dry filler for the pattern, composition MAI-KTM-500 instead of the old wet filler.

Card 1/3

The Production of Accurate Castings by the Lost Wax Process with Patterns Made of Composition MAI-KTM-500.

The composition previously used for making patterns is given, the new composition consists of 84.5% rosin, 11.8% paraffin wax, 1.0% ceresine, 0.4% bitumen. A variety of different parts that have been produced by this method are illustrated in Figs. 1,2 and 3. A wider range could be made than previously because the ceramic covers of the moulds are much stronger than before. The new composition can be used repeatedly. The advantages of the new composition over materials of lower and higher melting points are briefly stated. When the composition is melted out of the mould little damage is done because its coefficient of expansion is small. Indeed, the moulds are even strengthened because the composition penetrates into the pores of the ceramic. Especially good results were obtained with the new material in the manufacture of turbine blades as shown in Fig. 4. As a result of introducing

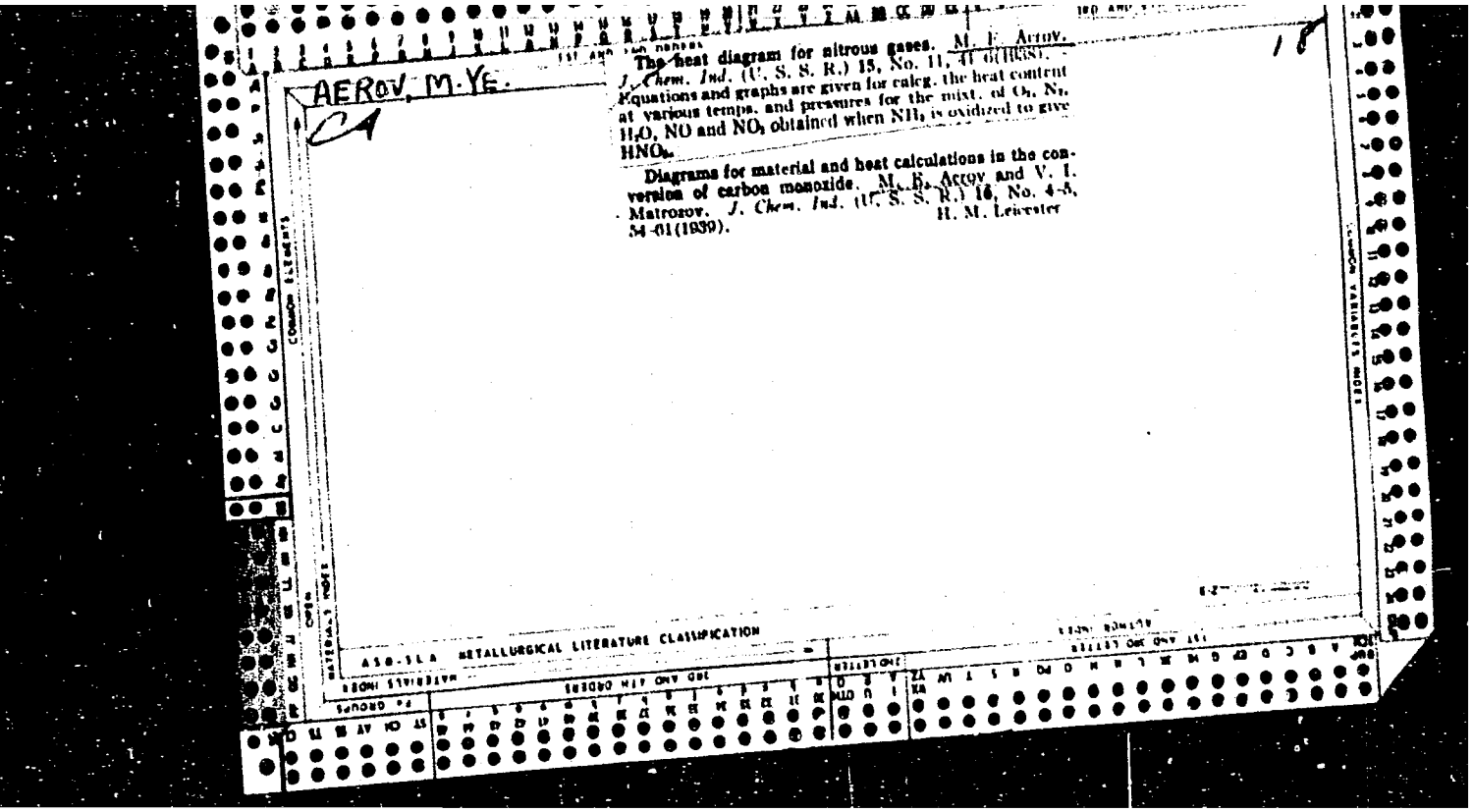
The Production of Accurate Castings by the Lost Wax Process with Patterns Made of Composition MAI-KTM-500.

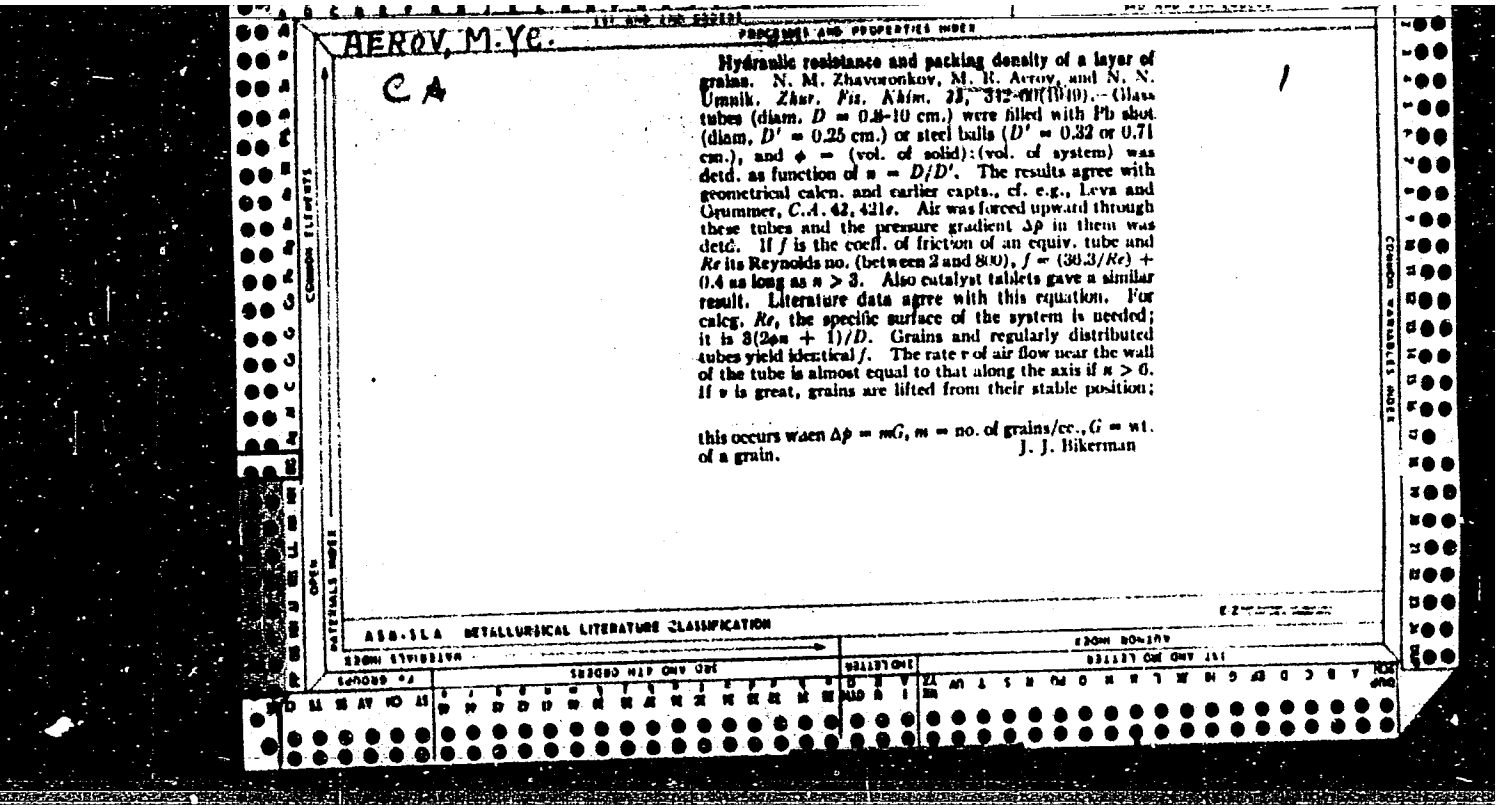
the new method of accurate casting, the annual economy of electric power is more than 2.4 million kWh and working conditions have been improved. There are 4 figures.

Card 3/3

ZELENTSOVA, N.I.; BERGO, B.G.; AEROV, M.A.; PLATONOV, V.M.

Investigating the design of a set-up for separating casing-head gases using a liquid coolant. Gaz. prom. 8 no.6:30-35 '63.
(MIRA 17:8)





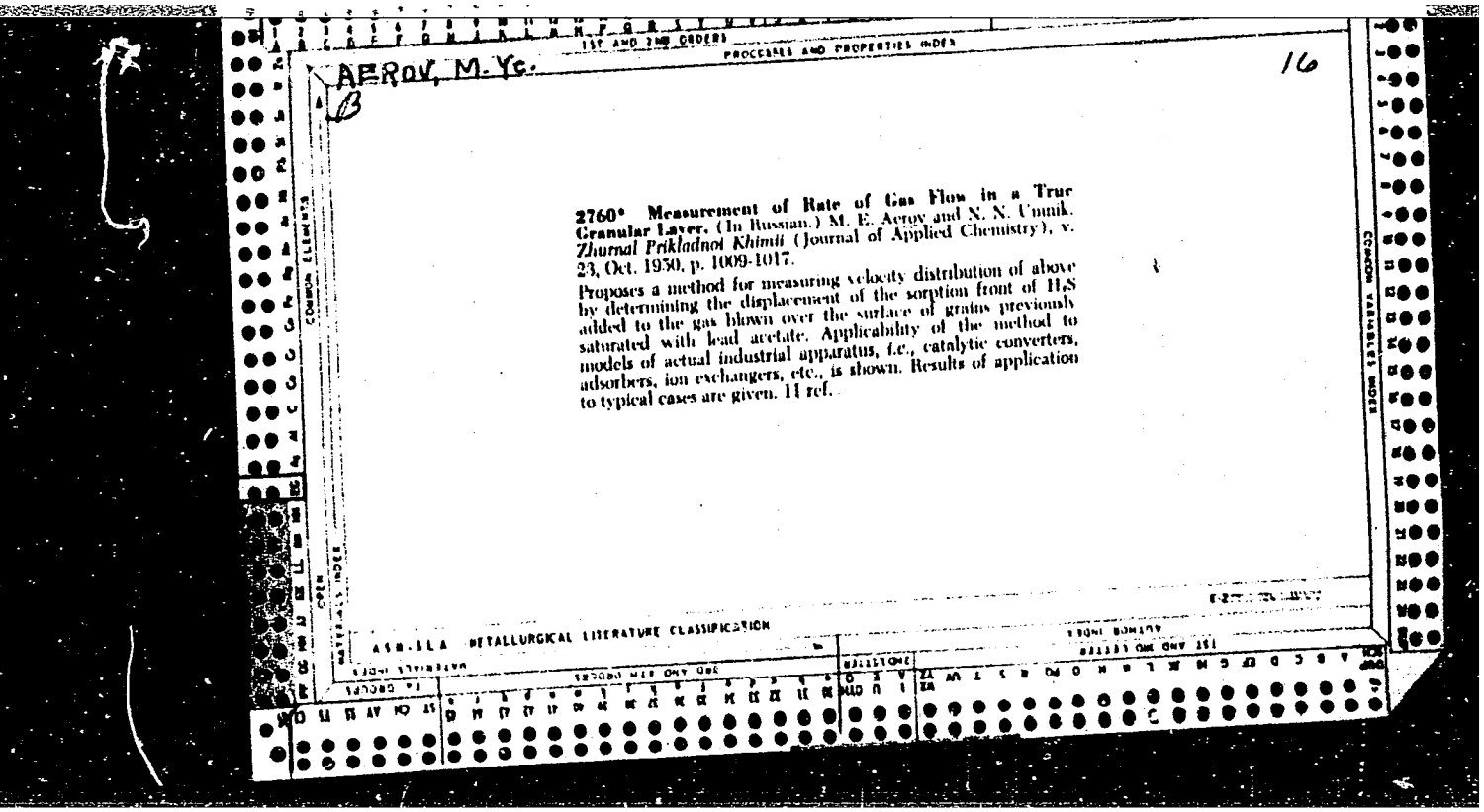
AEROV, M.Ye.

CA

1

Hydraulic resistance and packing density of a layer of grains. N. M. Zhavoronkov, M. E. Aerov, and N. N. Umnik. *Zhur. Fiz. Khim.* 23, 312-20(1949).—Glass tubes (diam. D = 0.8-10 cm.) were filled with Pb shot (diam. D' = 0.25 cm.) or steel balls (D' = 0.32 or 0.71 cm.), and ϕ = (vol. of solid):(vol. of system) was detd. as function of $n = D/D'$. The results agree with geometrical calcn. and earlier expts., cf. e.g., Leva and Grummer, *C.A.* 42, 421*e*. Air was forced upward through these tubes and the pressure gradient Δp in them was detd. If f is the coeff. of friction of an equiv. tube and Re its Reynolds no. (between 2 and 800), $f = (30.3/Re) + 0.4$ as long as $n > 3$. Also catalyst tablets gave a similar result. Literature data agree with this equation. For calcg. Re, the specific surface of the system is needed; it is $3(2\phi n + 1)/D$. Grains and regularly distributed tubes yield identical f. The rate v of air flow near the wall of the tube is almost equal to that along the axis if $n > 6$. If v is great, grains are lifted from their stable position; this occurs when $\Delta p = mG$, m = no. of grains/cc., G = wt. of a grain.

J. J. Bikerman



AEROV, M. Ye.

16

2760* Measurement of Rate of Gas Flow in a True Granular Layer. (In Russian.) M. E. Aerov and N. N. Umnik. *Zhurnal Prikladnoi Khimii* (Journal of Applied Chemistry), v. 23, Oct. 1950, p. 1009-1017.

Proposes a method for measuring velocity distribution of above by determining the displacement of the sorption front of H_2S added to the gas blown over the surface of grains previously saturated with lead acetate. Applicability of the method to models of actual industrial apparatus, i.e., catalytic converters, adsorbers, ion exchangers, etc., is shown. Results of application to typical cases are given. 11 ref.

AEROV, M. E.

"Some Problems of Aerodynamics and Heat Transfer in Catalytic Reaction Apparatuses." Sub 29 Nov 51, Moscow Inst of Chemical Machine Building.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 430, 9 May 55.

536.23 : 536.25

5725. Phenomena of free convection in a granular stratum. M. E. Aerov and N. N. Umnik. *Zh. Tekh. Fiz.*, 21, 1345–50 (No. 11, 1951) *In Russian.*

Free convection currents are set up by temperature rises in granular strata filled with a gas of comparatively high specific gravity, and these lead to a considerable increase of the effective thermal conductivity of the granular layers. This phenomenon, discovered in 1936, is of a considerable importance for high-pressure processes, combustion in metallurgical furnaces, gas generators with coking shafts, and catalytic processes, where it is very important for the first sections of the catalytic convertors with a high temperature gradient and concentration. However, this problem has not so far been treated quantitatively. The author's tentative relation between convection current and effective thermal conductivity of the granular stratum (under the simplifying assumption of the absence of a temperature gradient between gas flow and solid particles) based on considerations of similitude, is successful in establishing the conditions of the occurrence of a convection current, and in the determination of its intensity as well as of the increase in the thermal conductivity owing to the convection current. The results are fully borne out by the experiments.

B. P. KRAUS

SU [illegible]
Sect. II

536.22/.23

5723. **Coefficients of thermal conductivity in a granular stratum.** M. E. Aerov and N. N. Umnik. *Zh. Tekh. Fiz.*, 21, 1351–63 (*No.* 11, 1951) *In Russian.*

A method of determining the coefficient of thermal conductivity in a granular layer in which a gas or liquid flow exists is presented. The method works with temperature measurements on the axis of symmetry of the steady 2-dimensional heat flow. These measurements show the equality of the coefficients of conductivity along and across the gas flow. The coefficients of conductivity, neglecting radiation, for glass balls, gravel and catalytic substances in the form of spherules, tablets and Raschig rings were measured in the interval of Reynolds numbers $Re = 0{\cdot}01$–3000 in flows of dry air, H, and CO_2. For badly conducting porous grains of spherical shape or tablets of insignificant roughness an empirical relation, valid for the range $Re = 10$–3500, was found: $\lambda/\lambda_{gas} = 10{\cdot}5 + 0{\cdot}8RePr$, where $Pr = c_p\mu/\lambda_{gas}$ is the Prandtl criterion for the gas penetrating the granular stratum.

B. F. KRAUS

Sect. H

536.24

8727. **Heat exchange from pipes filled with a granular material.** M. E. AERov AND N. N. UMNIK. *Zh. Tekh. Fiz.*, 21, 1364-71 (*No.* 11, 1951) *In Russian.*

The heat exchange process from a pipe with a granular stratum through which a gas flows is considered. The conception of a skin resistance to heat transfer at the pipe wall is introduced. A relation between the general heat exchange coefficient from the tube with a granular layer with the coefficient of thermal conductivity of the layer and the heat exchange coefficient at the tube wall was found. The relation determining, for grains of non-conducting material, the value of the exchange coefficient at the tube wall in the interval of Reynolds numbers 150-4000 takes the form $Nu_{wall}/Pr^{1/3} = 0{\cdot}155\,Re^{3/4}$, where Nu_{wall} is the Nusselt coefficient at the wall, Pr the Prandtl criterion.

B. F. KRAUS

Coefficient of diffusion in granular layers. M. B. Arrov and N. N. Umnik. *Zhur. Priklad. Khim.* 27, [illegible] (1954).—Diffusion coeff. D of CO from a central point source into a stream of air was detd. in a cylinder 100 mm. in diam. and 110 mm. high packed with 7 different types of packing over a range of Reynolds No. 2-600 and mass velocity G = 50-5000 kg./sq. m. hr. This work was completed when that of Bernard and Wilhelm (*C.A.* 44, 3652i) appeared and differs from the latter in that it eliminates the wall effect more completely; thus it permits the use of a simpler equation for the [illegible] of [illegible] Wilson's). The concn. of CO at the wall was zero for all but one series of expts., with Raschig rings (15 mm.), when the ratio of the concn. at the center and that at the wall was larger than 10; a ratio smaller than 6 resulted in serious errors. For the same G, D for Raschig rings was 4 times larger than for spheres (7.15 mm.). The existence of eddy currents near the packing even at low Reynolds nos. (Re) were recognized, and an equation similar to that for heat transfer (*C.A.* 47, 7830i), with Schmidt no. (Sc) replacing that of Prandtl, was set up: $(D - D_0)/(D_0 . Sc) = K Re$. For spheres and for Raschig rings 15 and 8 mm. the values of K are 0.0808, 0.135, and 0.208. J. Bencowitz

AEROV, M.E

AID P - 3930

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 13/19

Authors : Shcherbak, L. I., S. Sh. Byk, and M. E. Aerov

Title : Phase equilibria in the system phenol-water-α-methylstyrene.

Periodical : Zhur. prikl. khim. 28, 10. 1120-23, 1955

Abstract : The liquid-vapor equilibrium of the system phenol-water-α-methylstyrene was attained in 1.5-2 hrs. An azeotropic mixture containing 7% phenol, b.p. 162°C, was obtained. Two tables, 5 diagrams, 5 references, 3 Russian (1946-52).

Institution : None

Submitted : Ap 9, 1954

USSR/Processes and Equipment for Chemical Industries - Processes and Apparatus for Chemical Technology. K-1

Abs Jour : Ref Zhur - Khimiya, No 2, 1957, 6921

Author : Dil'man, V.V., Darovskikh, Ye.P., Aerov, M.E., Aksel'rod, L.S.

Inst :

Title : Hydraulic Resistance of Reticulated and Perforated Plates

Orig Pub : Khim. prom-st', 1956, No 3, 156-161

Abstract : The following equation has been derived for computing hydraulic resistance of reticulated plates:
$\Delta P = \xi \cdot \gamma_G \cdot u_c^2 / [(1 - \beta) \cdot 2g(1-\tau)^3] + 2\sigma / [a (1 - \beta)]$. For perforated plates the factor 4 must be used in the second term of this equation. Herein ΔP -- plate resistance; ξ -- coefficient of resistance of a dry plate; $\beta = \Delta P_z / (\gamma_L h)$. ΔP_z -- mean static

Card 1/3

Abs Jour : Ref Zhur - Khimiya, No 2, 1957, 6921

pressure of liquid on the plate, γ_L the specific gravity of the liquid, h -- depth of liquid on plate; γ_G -- specific gravity of the gas; u_c -- gas velocity in the apertures of the plate; ε -- portion of free section of the plate through which the liquid is flowing down ; σ -- surface tension of the liquid; a -- width of aperture. On taking into account the effect of entrainment in reticulated plates, it is necessary to substitute, in the foregoing equation, $\gamma_{G_0}(1 + K)$, in lieu of γ_G, wherein γ_{G_0} is specific gravity of the gas without entrained liquid, K is the specific entrainment of liquid, in kg per kg of gas. Experimental data are found to deviate from the above-stated equation by ± 15%. The equation was derived on making the following assumptions: a) Outflow of both phases is steady state outflow; b) the column of liquid, at the site of its downflow, is

USSR/Fitting Out of Laboratories - Instruments. Their Theory, Construction, and Use. H-

Abs Jour : Ref Zhur - Khimiya, No 3, 1957, 8746

Author : Aerov, M.E., and Zelentsova, N.I.
Inst :
Title : Apparatus for the Continuous Control of Liquid Purity on the Basis of the Difference in the Distillation Temperatures of the Light and Heavy Fractions.

Orig Pub : Zavod. laboratoriya, 1956, 22, No 6, 739-740

Abstract : The apparatus consists of two continuously operated series-connected semimicro-rectification columns. Each column consists of a rectification section 320 mm long and 10 mm in diameter; the lower portion of the column is connected to the pot and the upper portion to the distillate receiver. The withdrawal of the distillate and of the pot liquid is controlled by the immersion depth of wires placed in capillary tubes. The column

Card 1/2

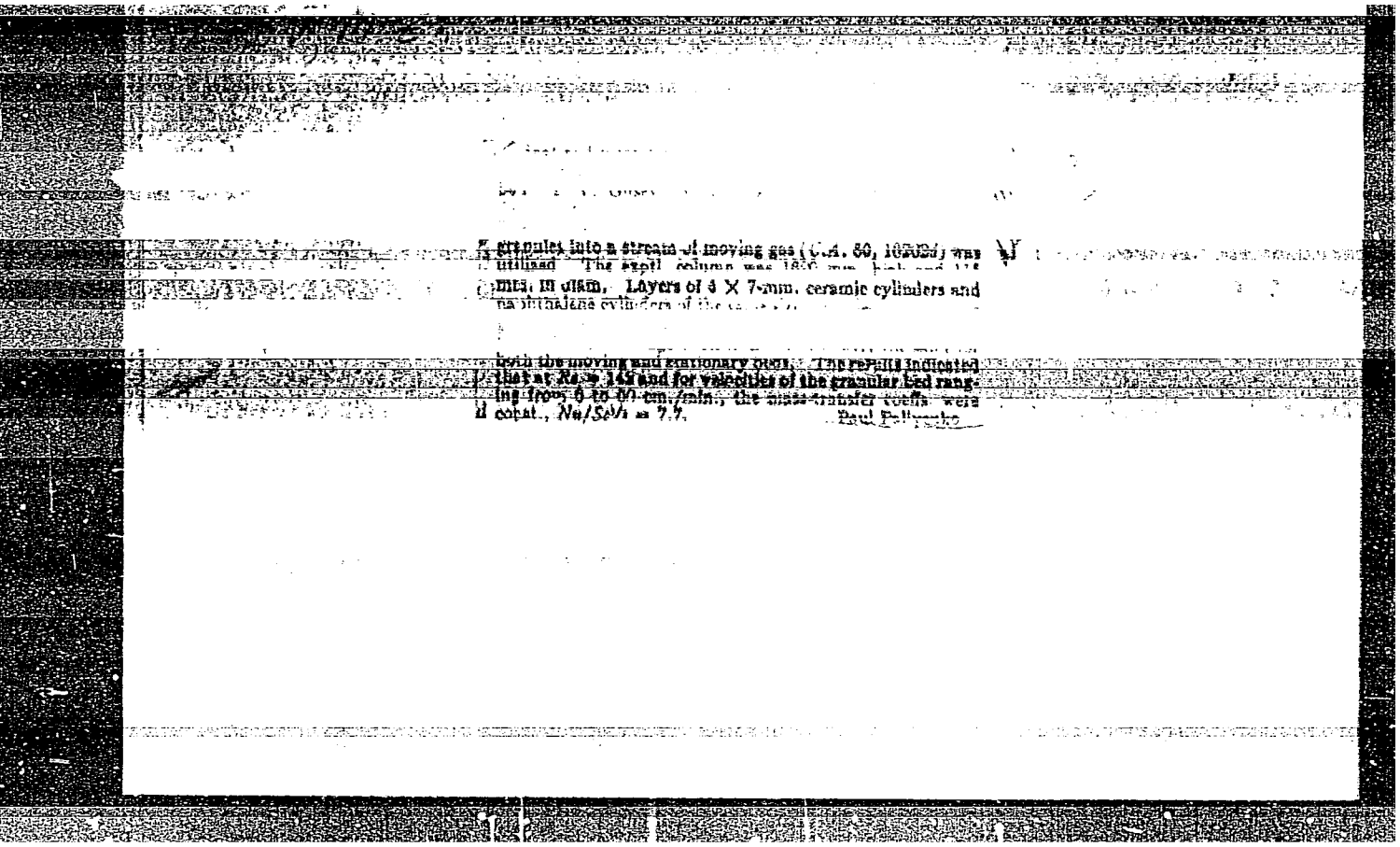
SUBJECT USSR / PHYSICS
AUTHOR AEROV, M.E., UMNIK, N.N.
TITLE The Heat- and Mass Transfer in a Granular Layer. I.
PERIODICAL Žurn.techn.fis, 26, fasc. 6, 1233-1242 (1956)
Issued: 7 / 1956 reviewed: 10 / 1956

Here the heat- and mass transfer in a layer of geometrically regular grains with not too small linear dimensions is investigated. The apparatus used for measuring consists of a cylindrical tube of 100 mm diameter, and the gas is introduced from the bottom to the top. The coefficient of the mass transfer was determined from the reduction of the weight of the elements of the filling which were made of naphtalene. These elements, which, as regards form and dimensions, are quite similar to other grains of the filling which were not made of non-sublimating material, are arranged in one or two rows in the upper half of the filling. The production of the grains made of naphtalene and the order in which tests were carried out is described.
Next, the naphtalene content in the gases which corresponds to the equilibrium is measured. Apparatus and carrying out of the test are described on the basis of a drawing. The dependence of the logarithm of the partial pressure p^* prevailing in the state of equilibrium on $1/T$ (T - absolute temperature) is characterized by straight lines having the same inclination. The sublimation heat of the naphtalene, which was computed from this inclination, amounts to $\sim$ 129 kal/kg, which is 10% less than the sublimation heat in the vacuum.
The diffusion coefficient of the naphtalene vapors diffused into the gas was de-

SUBJECT USSR / PHYSICS CARD 1 / 2 PA - 1349
AUTHOR AEROV, M.E., UMNIK, N.N.
TITLE The Heat- and Mass Transfer in a Granular Layer. II.
PERIODICAL Zurn.techn.fis, 26, fasc. 6, 1243-1250 (1956)
Issued: 7 / 1956 reviewed: 10 / 1956

At first the authors compare their results in detail with those obtained by foreign authors. Next, the heat transfer of a layer of grains is compared with the heat transfer in a chessboard-like arranged bundle of tubes with a flow passing vertically through them. Agreement is tolerably good. There follows a discussion of the heat- and mass transfer to a sphere and a cylinder in a granular layer and in a free flow. The NUSSELT number for a single sphere tends towards two if the REYNOLD number is reduced; on the occasion of the heat transfer of the sphere in the layer this boundary value is apparently much lower and the NUSSELT number in the interval Re_o = 12 to 4 Nu still depends considerably on Re. The NUSSELT number for a cylinder with a transversal flow round it tends towards the constant value $1/\pi$ if the REYNOLD number is reduced.

Discussion of results: The general assumptions made by Z.F.ČUCHANOV, Izv.Akad. Nauk, Otdel.techn.nauk, No 10, 1341 (1947) with respect to the thermal conditions in a granular layer are confirmed by the present investigation. Thus the motion of the gas, at least at $Re_o > 50$, is to be considered as an "exterior problem". However, the relations mentioned by ČUCHANOV are not in agreement with the results obtained by many works published later, and various



Aerov M.E.

USSR/Thermodynamics - Thermochemistry. Equilibria. B-8
Physical-Chemical Analysis. Phase Transitions.

Abs Jour : Referat Zhur - Khimiya, No 6, 1957, 18537

Author : L.I. Shcherbak, S.Sh. byk, M.E. Aerov.
Title : Phase Equilibria in Phenol - Water - -Methylstyrene System.

Orig Pub : Zh. prikl. khimii, 1956, 29, No 3, 353-360

Abstract : In continuation of earlier published work (RZhKhim, 1956, 77599), the equilibrium liquid - liquid in the system phenol - water - α-methylstyrene was studied. The binodal curves were obtained by the method of "cloud tests"; the mixtures were titrated with water. Binodals at 20, 45 and 70° and the composition of equilibrium phases at 45° were obtained. It was noted that the rule of D.P. Tarasenkov (Zh. fiz. khimii, 1940, 14, 589) was not observed in application to the studied ternary system, as well as to the systems phenol - water - naphthalene and

Card 1/2 - 216 -

BYK, S.Sh.; STROITELEVA, R.G.; AEROV, M.E.

Phase equilibrium in the system phenol-water-α-methylstyrene.
Zhur. prikl. khim. 29 no.12:1880-1881 D '56. (MLRA 10:6)
(Phase rule and equilibrium) (Systems (Chemistry))

AEROV, M.E.

USSR/ Physical Chemistry - General problems of isotope chemistry B-7

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11097

Author : Ottesen B.V., Aerov M.E.
Title : Preparation of N^{15} Concentrates in a Cascade Unit by Chemical Exchange Method

Orig Pub : Zh. fiz. khimii, 1956, 30, No 6, 1356-1366

Abstract : Description of a unit for the daily production of 0.5 g nitrogen, in the form of NH_3, having a N^{15} concentration of 40 at. %. Increase in N^{15} takes place according to the reaction: $(N^{14}H_4)_{sol} + (N^{15}H_3)_{gas} \rightleftarrows (N^{15}H_4)_{sol} + (N^{14}H_3)_{gas}$. The cascade consists of three glass columns (K1, K2, K3) packed to a height of 9.4 m each. Diameter in mm : K1 62, K2 25, K3 10. Packing of cylindrical spirals (diameter and height 2-4 mm), wound from steel wire (EYal-T Brand) 0.2 mm in diameter. A 40% solution of NH_4NO_3 (4.2 l/hour) is fed by a diaphragm-piston pump into K1 on leaving which 0.5 l/hour of solution passes into K2 and 3.7 l/hour into reaction chamber connected to packed evaporation column wherein by action of alkali NH_4NO_3 liberates NH_3 which passes into K1. 10% of solution that passed trough K2 go into K3 while from the remainder is liberated in analogous

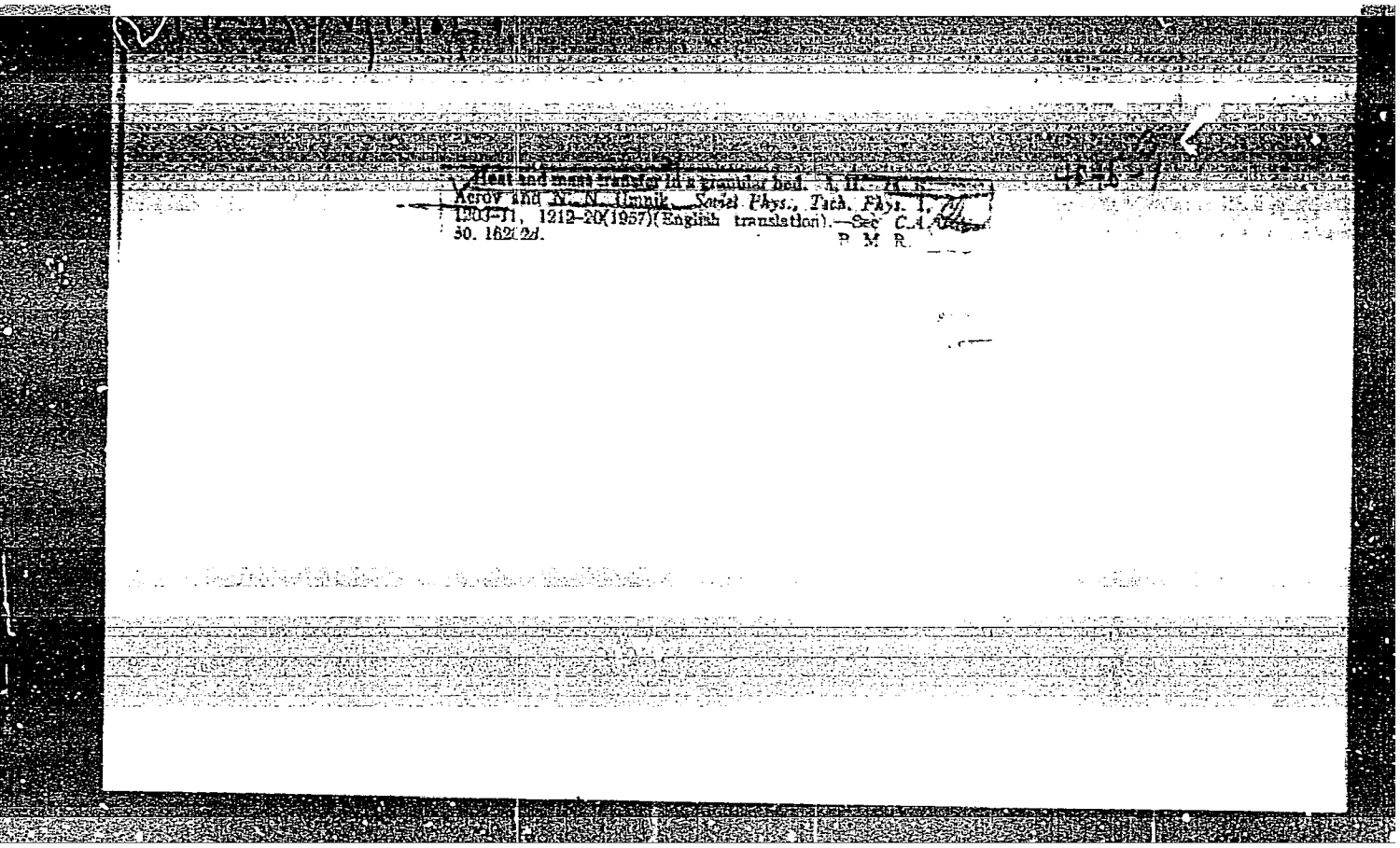
Card 1/2

USSR/ Physical Chemistry - General problems of isotope chemistry B-7

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11097

manner NH_3 that passes into K2. At egress of K3 final product is collected. From remainder of solution is liberated NH_3 which passes into K3.

Card 2/2



Heat and mass transfer in a granular bed. I, II. A. V. Aerov and N. N. Umnik. *Zhurnal Fiziki, Tech. Fiziki*, 1, 1203–11, 1212–20(1957)(English translation).—See C.A. 52, 30, 1622d.

P. M. R.

AEROV, M.E.; DAROVSKIKH Ye.P.

Efficiency of a grid tray rectifying column under different operating conditions. Khim. prom. no.2:92-94 Mr '57. (MIRA 10:6)

1. Nauchno-issledovatel'skiy institut sinteticheskikh spirtov i organicheskikh produktov.
(Plate towers)

AEROV, M.E.;BYSTROVA, T.A.

Grid plates as compared with bubble plates and fractionating column packings. Khim. nauka i prom. 2 no.1:97-101 '57. (MLRA 10:4)
(Distillation apparatus)

AEROV, M.E.

USSR/Physical Chemistry - Kinetics, Combustion, Explosions, Topochemistry, Catalysis. B-9

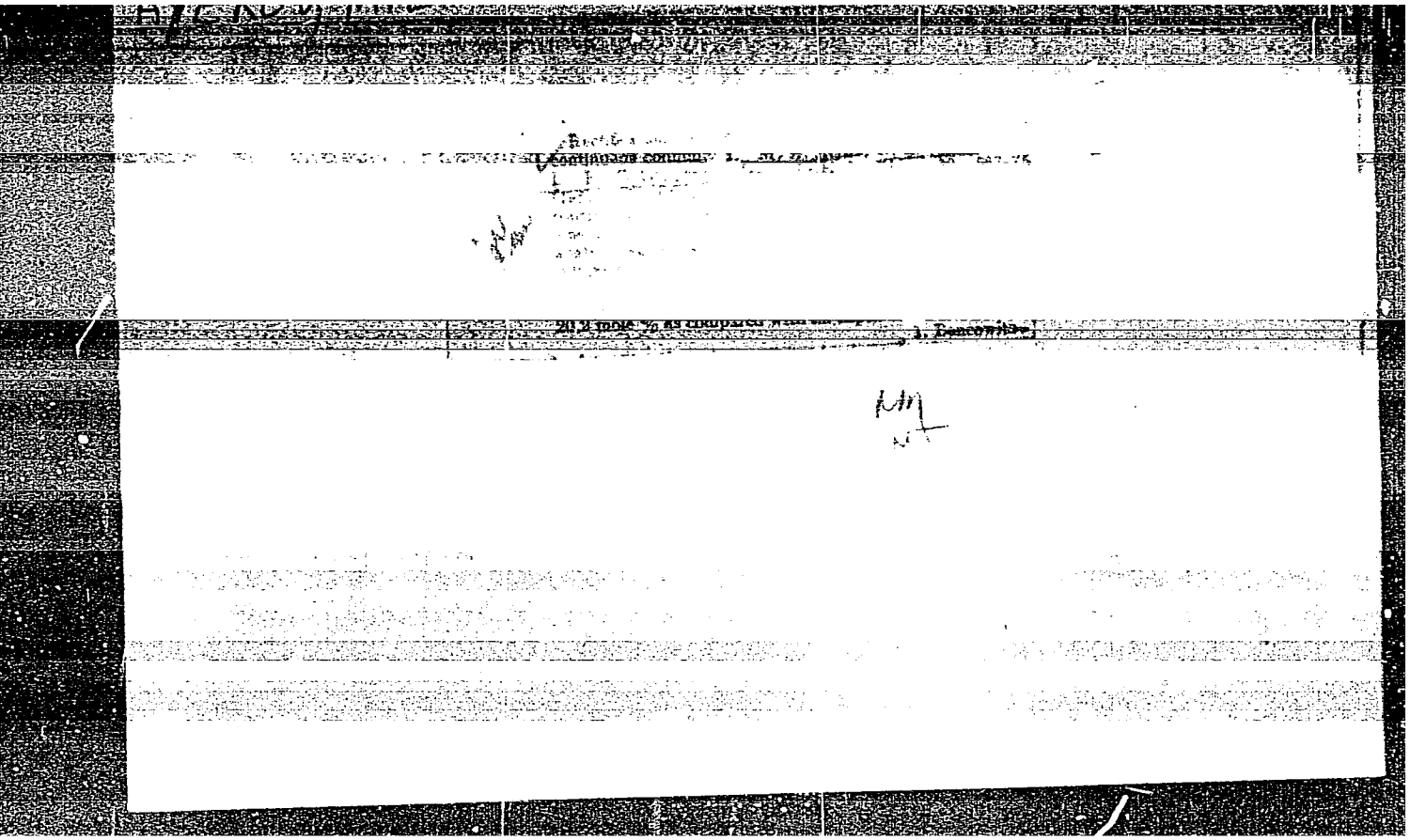
Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 514

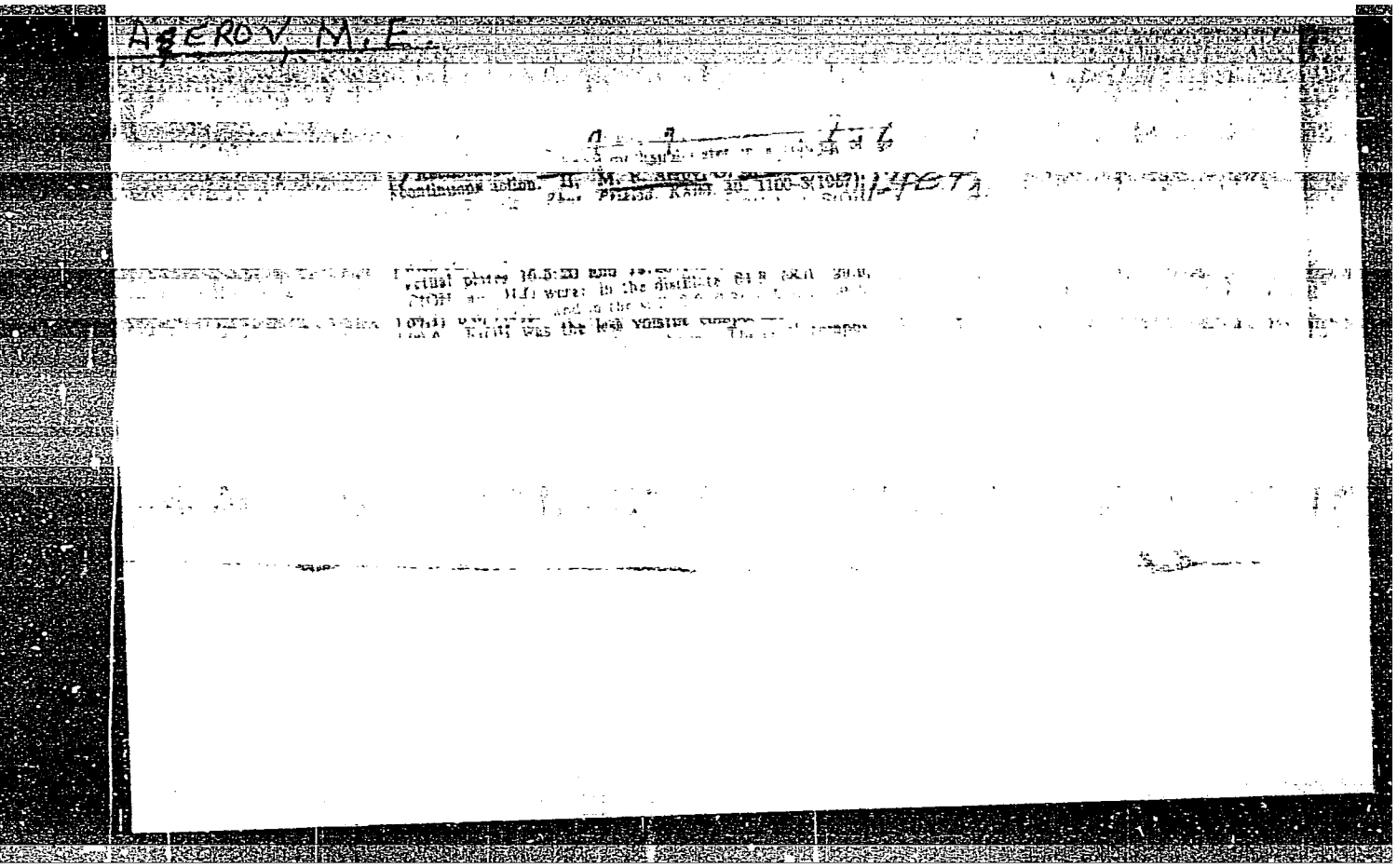
Author : M.E. Aerov, P.I. Luk'yanov, G.A. Baluyeva.
Inst : -
Title : Laboratory Reactor with Suspended Catalyst Layer.

Orig Pub : Zavod. laboratoriya, 1957, 23, No 3, 369-370

Abstract : The authors constructed a laboratory reactor for the study of porcesses of treatment of vaporous (gaseous) and solid substances in pseudoliquefied systems. This reactor secures the regime of pseudoliquefying the layer of the granular catalyst, at which no stratification into a gaseous and a solid phase takes place.

Card 1/1





5(1),25(5)

AUTHORS: Kagan, S. Z., Aerov, M. E., Volkova, T. S., Vostrikova, V. N.

SOV/64-58-7-12/18

TITLE: Investigating Extraction Apparatuses With Mechanical Mixing of the Phases (Issledovaniye ekstraktorov s mekhanicheskim peremeshivaniyem faz)
Rotor Disk Extractors (Rotorno-diskovyye ekstraktory)

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 7, pp 432-438 (USSR)

ABSTRACT: The effect of the operation of these extractors is based on the fact that in each section between the rotor disks a closed radial current is formed by the rotating disks. Of late, several types of extractor columns of this type were proposed (Refs 8, 10, 11, 13, 14, 18, 22, 25). Yet the investigations carried out hitherto are incomplete and the results obtained are even contradicting each other (Refs 16, 16a, 17, 20, 26). In the present case the hydrodynamics and mass transfer of the rotor disk extractors is investigated as a function of the physical properties of the system, of the geometrical ratios within the apparatus , as well as of the dimensions of the apparatus. The experiments were carried out in extractors of different dimensions. Two systems were investi-

Investigating Extraction Apparatuses With Mechanical Mixing of the Phases. Rotor Disk Extractors

SOV/64-58-1-12/18

gated: 1.-Diisopropyl ether - water - phenol, and 2.-Kerosene - water - phenol (water = tap water, phenol is pure according to GOST 64-17 - 52, diisopropyl ether - δ = 0.725, boiling-point 68.6°, kerosene - δ = 0.816, boiling range 119 - 232°). A change of the ratio ether:water from 1 : 3 to 1 : 9 and that of kerosene:water from 1 : 3 to 1 : 10 shows a low effect on the capacity limit of the extractor. The capacity of the extractor decreases to a certain limit with the increase in the speed of rotation of the rotor, with the intensity of mass transfer (mainly) increasing. There are 10 figures, 5 tables, and 26 references, 6 of which are Soviet.

Card 2/2

Аеров М.Е

SOV/63-3-6-5/43

AUTHORS: Aerov, M.E., Docter of Technical Sciences, Malyusov, V.A., Candidate of Technical Sciences

TITLE: Advances in the Technique of Rectification (Novoye v tekhnike rektifikatsii)

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1958, Vol III, Nr 6, pp 736-745 (USSR)

ABSTRACT: The publications of the recent 1 - 1.5 years on rectification are discussed here. The number and size of plates in rectification columns used for the separation of binary systems is now determined graphically [Ref. 1]. The rectification of multicompound systems may be calculated by means of a computor [Ref. 7]. Figures 1 and 2 show the results of such calculations for a de-ethanizer. Rectification columns with bubbling plates are the types mostly used now. The hydraulics and the mass exchange in the grid-plates of these columns are investigated in [Ref. 19]. Designing and operation experience of columns with more than 50 plates used for the production of pure isobutylene, ethylene, benzene, xylene, etc is published in [Ref. 31]. Grid

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plates in the columns increase the output 2 - 3 times and improve the quality of separation [Ref. 45]. In two patents [Ref. 55, 56] different modifications of the slits in the plates are dealt with. Film columns consisting of pipes with 4 - 6 mm in diameter as well as columns with plane-parallel inserts are now of great interest. Most efficient are inserts made of fabrics and sheet iron [Ref. 59] which have a hydraulic resistance 50 - 60 times lower than ring inserts. The rectification of an alcohol-water mixture is investigated in [Ref. 61]. It has been shown that in pipes of 8 - 20 mm in diameter an emulsification condition may be reached. For vacuum rectification columns with regular inserts are regarded most efficient. A column with spiral insert made of sheet metal is described in [Ref. 73]. These columns are used for the rectification of organic silicon compounds. A 37-stage laboratory apparatus used for the continuous separation of thermally instable organic compounds is described in [Ref. 87]. Rectification methods are applied for the separation of stable isotopes of hydrogen, helium, lithium, boron, etc. A light isotope of helium, He^3, may be obtained by the rectification of liquid helium [Ref. 107, 108]. The separation of cracking gases in the USA is described in [Ref. 120, 121]. The results of a scientific technical conference in Ufa in May 1958 con-

vened by the industry of synthetic alcohol are published in [Ref. 122]. Mixtures of organic compounds have a wide range of boiling points. The effect of separating agents is discussed in [Ref. 131].
There are 3 graphs and 140 references, 63 of which are Soviet, 58 English, 6 American, 6 French, 4 German, 1 Canadian, 1 Polish, and 1 Czechoslovakian.

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TITLE: Computation of Rectification on Analog Computers

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 7, pp 555-560 (USSR)

ABSTRACT: The editors of the periodical refer to the fact that the method described in the present paper is based on the assumption of a complete countercurrent vapor - liquid. This supposition would have to be proved, however, for disk columns. This article was published, nevertheless, in order to draw attention to the possibility of using analog computers for the computation of processes in chemical technology. The use of analog computers for the computation of rectification, condensation, and other processes of gas fractionation makes it possible to mechanize this computation procedure in scientific institutes and industrial laboratories. The usual computation of rectification is based on the concept of "theoretical plates". This concept is, however, a very crude simplification as the vapor concentration changes continuously in real fractionating columns. The transfer of mass from liquid to vapor can be

represented by the basic equation

$$\frac{dl_i}{dH} = \beta_x \left(X_i - \frac{Y_i}{K_i} \right) \quad (1)$$

For the computation of analog computers this equation is brought into the following form: $l_p = L - \sum_{i=1}^{p-1} l_i$ (7). This equation characterizes the total mass balance. It is composed of two systems of differential equations (one for the fractionating and one for the concentrating section of the column). The boundary conditions for solving the equations result from the construction of the respective columns. Generally the computation of one fractionating column demands the solution of two equation systems of general differential equations of (p-1)st order. In the present paper the two mentioned systems of differential equations are solved by integrating in the MGU computation center of an analog computer, type IPT-5. The boundary conditions are given by one system of linear and one of non-linear algebraic equations. The results of the rectification computations are not unequivocal, as the system contains some

degrees of freedom that can, however, be fixed by arbitrary restrictions. The computation procedure worked out was tested with various fractionating columns. Table 1 gives a survey over the products of ethane fractionation in a column and over the relative volatilities of components; table 2 shows the distribution of components in the fractionating column for ethane. Table 2 and figure 3 show similar conditions found in the course of fractionating methane. The results of the completed computations prove that the rectification procedure can be computed on analog computers with satisfying accuracy and great time saving. Because of these reasons the use of analog computers in scientific research institutes and planning institutes is highly recommended. The whole computation procedure is described in detail in the paper. Meaning of symbols used in equations: l_i - amount of any component i in the liquid (mol/hour); β_x - coefficient of transfer of mass, referred to the concentration difference in the liquid (mol/hour.m); H - coordinate of any cross-section (in m); X_i, Y_i - absolute concentrations of the component i in the liquid or in vapor respectively (mol/mol); K - equilibrium constant for the component i; L - amount of liquid (mol/hour). There are 4 figures, 2 tables, and 3

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references.

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